



# Annual Report

## State Energy Management Program

2015 Acts and Resolves No. 58, Sec. E.112, as amended by 2019 Acts and Resolves No. 72, Sec. E.112 (d) On or before October 1 of each year commencing in 2016 and ending in 2023, the Department and EVT shall provide a joint report on the implementation of this section.

July 1, 2020 – June 30, 2021

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# Executive Summary

In accordance with 2015 Acts and Resolves No. 58, Sec. E.112, the Vermont Department of Buildings and General Services (BGS) and Efficiency Vermont (EVT) collaboratively developed and launched the State Energy Management Program (Program) to accelerate energy management measures, implementation of energy efficiency and conservation, and the use of renewable energy resources for State buildings and facilities.

In FY2016, the first year of the Program, BGS and EVT executed a Memorandum of Understanding, defining the relationship, roles, and responsibilities of each organization as it pertains to the Program. BGS, with support from EVT, recruited, hired, and trained the Program team effectively creating the BGS Energy Office.

After a successful four-year preliminary period, the Legislature passed 2019 Acts and Resolves No. 72, that amended section E.112 of 2015 Acts and Resolves No. 58 to increase the program preliminary period from four to eight years.

The following information includes program information by fiscal year concerning the energy efficiency opportunities identified, developed, and implemented by BGS and EVT as reported in initial annual cost savings and cost savings over the entire life of the project measures implemented for the State of Vermont:

- FY2017, over \$150,000 of initial year savings and over \$1.2 million in lifetime savings.
- FY2018, over \$397,000 of initial year savings and over \$3.6 million in lifetime savings.
- FY2019, over \$227,000 of initial year savings and over \$2.7 million in lifetime savings.
- FY2020, over \$183,828 of initial year savings and over \$1.2 million in lifetime savings. Project development in the second half of FY2020 was limited due to the onset of the global pandemic caused by the Coronavirus and the COVID-19 disease (“COVID-19”).
- FY2021, over \$158,366 of initial year savings and over \$1.3 million in lifetime savings. Project development throughout FY2021 remained limited due to the health and safety restrictions in place in response to the global pandemic caused by the Coronavirus and the COVID-19 disease (“COVID-19”).

In FY2022, the seventh year of the program, these efforts will continue to prioritize the worst performing buildings continue to be successful. The Program team is systematically executing energy evaluations on prioritized state-owned buildings in accordance with Section 24 Title 29: 157 VSA (a) (3), as amended by 2020 Acts and Resolves No. 139, Sec. 17. Completed evaluations have developed into successful energy savings projects while new evaluations are identifying opportunities for future energy savings projects. While the sixth year of the program was a success and included a large increase in building square feet evaluated setting up a robust future project pipeline, the Program has experienced additional unforeseen turnover and continued project delays as a result of COVID-19. With two years of program funding ahead, the Program team remains dedicated to the mission and excited to continue to help Vermont State Government lead by example.

The Energy Office’s project development process has become an integral part of BGS’ standard operating procedures when evaluating the overall building portfolio management needs resulting in a cohesive roadmap for continued Program success.

# FY2021: Targets, Actions, Results

## Targets:

In accordance with 2015 Acts and Resolves No. 58, Sec. E.112, as amended by 2019 Acts and Resolves No. 72, Sec. E.112, BGS and EVT aimed to reduce the State's total energy usage and related costs by an amount not less than \$150,000 annually through measures implemented as part of the Program.

## Actions:

- BGS and EVT are implementing the Program process, including:
  - Project identification, development, management, and completion procedures,
  - Hand-off points during the execution of projects, and
  - Documentation, tracking and reporting.

Program representatives from each organization continue to meet virtually due to COVID-19. Meeting goals include collaborative project identification, development, and management. Team meetings occur as needed to communicate specific program and project needs and to evaluate program success.

- Energy Star Portfolio Manager® (“ESPM”) is serving as a functioning building energy accounting system that includes baseline and annual energy data. The Program team utilizes ESPM to analyze building energy consumption data and develop prioritized building lists based on building performance metrics. New data sharing with Vermont Gas will allow their fuel consumption tracking system for participating accounts to link directly to the BGS ESPM accounts to access detailed gas consumption data.
- BGS recently issued a Request For Proposals that resulted in four new contracts for professional energy auditing services. In FY2021, the Program team successfully audited over 376,261 square feet of building space, equal to 13% of BGS's total space. The increase in audited square feet, from 246,303 square feet in FY20, was a result of concerted efforts on the part of BGS Operations and Maintenance staff to work with the Energy Office and their audit vendors to adjust energy audit procedures to accommodate COVID-19 site safety protocols. While the square feet audited in FY2021 increased, the program saw a decrease in project savings because of the difficulty imposed by COVID-19 in initiating and completing construction projects across state facilities. However, the increase in energy audits has provided a robust pipeline of potential projects to be implemented in FY22. The prioritized lists of buildings that have received energy audits and those buildings that are scheduled to receive energy audits are included in the Appendices.
- Following on the success of the SEMP for state owned facilities, the State of Vermont has received approval for supplemental resources from Vermont Low Income Trust for Electricity (VLITE) and the Clean Energy Development Fund to establish the SEMP Expansion pilot initiative. BGS in partnership with the Public Service Department (PSD) requested \$150,000 a year for two years of a four-year pilot from VLITE to support project staffing and implementation activities. The Public Service Department has also secured approval from the US Department of Energy to access \$300,000 of federal resources for this pilot, \$150,000 per year. The SEMP Expansion pilot will utilize the collaboration between BGS, the PSD, EVT, and the Vermont League of Cities and Towns, to provide energy performance contracting services to municipalities and public schools who have traditionally been underserved in this area due to the complexity of financing and contracting associated with these types of construction projects.
- BGS and EVT, with support from Burlington Electric Department, identified, developed, and completed energy saving projects as shown in the tables below.

## FY2021 Results:

Site	Project Focus	Cost	KWH*	MMBTU**	First-year \$ Savings	Lifetime \$ Savings	Payback Period.
Numerous locations	Efficiency VT Prescriptive Projects				\$6,031.60	\$90,215	
Numerous locations	Solar Net Metering				\$75,809***		
Barre Courthouse Lighting	LED Lighting and Controls	\$341,169.73	58,561		\$17,894.83	\$268,420.39	4.3
Middlebury Mahady Courthouse	LED lighting, Building Heating, Ventilation, Air Conditioning (HVAC)	\$81,323.62	63,794	13,519	\$36,071	\$541,076.07	2.3
Burlington 108 Cherry St	Exterior LED Lighting	\$2,773.75	29,415		\$286.30	\$4,294.29	9.6
Montpelier 120 State Street Can Lights	LED Lighting	\$1,080	5,610		\$634.95	\$9,524.78	1.7
Montpelier 120 State St Rm 103&105	LED Lighting	\$780	19,650		\$174.16	\$2,612.97	4.5
Royalton Police Barracks	LED Lighting	\$6,516.46	12,337		\$2,089.23	\$31,337.01	3
Newport Hebard State Office	LED Lighting	\$49,151.63	94,766		\$17,417.37	\$348,347.53	2.8
Pittsford Fire & Training Academy	Boiler Burner Replacement	\$13,714		1,991	\$1,958.39	\$29,374.73	7
Totals		\$496,509.19	284,133	15,510	\$158,366.83	\$1,325,202.77	

\* Annual Kilowatt-hours of electricity saved.

\*\* Annual million British thermal units (MMBTUs) representing thermal project savings.

\*\*\* Solar net metering savings are annual savings, not first year savings.

## FY2022: Projected Savings, Strategies

### Targets:

In accordance with 2015 Acts and Resolves No. 58, Sec. E.112, as amended by 2019 Acts and Resolves No. 72, Sec. E.112, BGS and EVT aim to reduce the State's total energy usage and related costs in FY2022 by an amount not less than \$150,000 through measures implemented as part of the Program.

BGS and EVT anticipate accelerated project development and completion as a result of the robust project pipeline generated from the increase in energy audits. Performance in some program areas may be delayed due to staffing shortages and COVID-19 safety protocols.

### Projected Savings:

Energy type	KWH	MMBTU	\$ Savings
Electricity	1,450,793		\$291,073
Thermal Fuels		17,925	
Solar Photovoltaic Net-Metering	5,850,592		\$79,770
Totals	7,301,385	17,925	\$370,843

A detailed list of planned FY2022 activities can be found in the Appendices.

### Strategies:

Collaborative and systematic project identification, development, and management is vital to the success of the Program. To ensure this process continues to be efficient and effective, BGS and EVT will evaluate the success of the following strategies and modify as necessary:

#### *Consistent, Collaborative Communication*

- The Program team shall adhere to the project identification, development, and management procedures defined in the MOU.
- The Program team, with representatives from each organization, shall continue to participate in virtual meetings as needed.

#### *Adequate Staffing*

- EVT shall dedicate staff resources totaling a minimum of one (1) Full Time Employee (FTE) to support collaboration and project completion with BGS for the duration of the Program.
- BGS shall maintain a staff team, supported by EVT, dedicated to Program implementation for project management and program support. These positions shall be in addition to BGS' State Energy Program Manager.

#### *Collaborative Project Identification, Development, Management, and Completion:*

- The Program team shall continue conducting energy evaluations on state-owned buildings, following the procedures developed by BGS with the support of EVT.
- With technical assistance from Efficiency Vermont as needed, BGS's Energy Project Managers finalize each project's scope of work and procure resources for implementation.

- Upon request, EVT assists BGS in assessing the need for commissioning or tuning of newly installed equipment.

*Energy Tracking:*

In accordance with 2015 Acts and Resolves No. 58, Sec. E.112, as amended by 2019 Acts and Resolves No. 72, Sec. E.112, BGS will continue to make improvements toward systems of measurement to achieve the goals of 2011 Acts and Resolves No. 40.

- Using ESPM, BGS will maintain an energy accounting system that includes baseline and annual data on energy consumption at properties owned or managed by BGS. BGS has requested that all state agencies who own and operate buildings utilize ESPM for these purposes.
- With respect to transportation, Administrative Bulletin 2.3 Appendix B: Fuel Card Use – State Owned Vehicles, effective February 2, 2016, established the requirements of the statewide universal fuel card program to provide State agencies and departments with a vehicle and/or equipment fuel card that allows State employees to purchase fuel and other vehicle related supplies and services for State vehicles and/or State-owned fuel-powered equipment in order to conduct governmental business. BGS can capture state employee fuel purchases through the WEX Fleet Purchase Card reporting system and will extend data tracking to EV fleet vehicles.
- Additionally, BGS recommends that the State of Vermont move toward a centralized energy data tracking and reporting system that encompasses all state government energy consumption data. This system should be provided by a third-party entity and administered with support from the service provider. The tracking system should provide a utility billing audit function. Currently, utility bills are paid by several different state entities. Inconsistencies in billing are not tracked and reported as regularly as they occur. Utility bill auditing can help find and fix issues relating to unusual billing period lengths, cost duplication, gaps in billing dates, frequently estimated bills, use or cost that exceeds the norm, significant variance from historical patterns for use, cost, or demand, meter reading issues, rate schedule issues, and actual vs. budget differences.

## FY2023: Projected Savings, Strategies

### Targets:

In accordance with 2015 Acts and Resolves No. 58, Sec. E.112, as amended by 2019 Acts and Resolves No. 72, Sec. E.112, BGS and Efficiency Vermont will continue to reduce the State's total energy usage and related costs of the Program by an amount not less than \$150,000 annually.

### Projected Savings:

Energy type	KWH	MMBTU	\$ Savings
Additional Projects resulting from Energy Audits	1,010,064	4,385	\$191,929
Solar Photovoltaic Net-Metering	5,500,000		\$55,356
Totals	6,5010,064	4,385	\$247,285

### Strategies:

Ongoing, collaborative, and systematic project identification, development, and management will remain critical to the long-term success of the Program. BGS and EVT will continue to execute the strategies as noted in the Memorandum of Understanding, making modifications and improvements as needed.

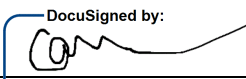
In accordance with 2015 Acts and Resolves No. 58, Sec. E.112, as amended by 2019 Acts and Resolves No. 72, Sec. E.112, BGS will continue to make improvements toward systems of measurement to achieve the goals of 2011 Acts and Resolves No. 40.



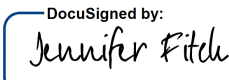
# Observations & Recommendations

BGS and EVT, through the development, launch, and implementation of the SEMP, have successfully achieved \$158,366 of annual energy savings and \$1,325,202 of lifetime savings for projects implemented in FY2021. With current staffing shortages, recruitment for vacant positions to support the SEMP will need to be prioritized to ensure that the program will continue to produce the required annual savings, and significant lifetime savings, for the State of Vermont.

Efficiency Vermont

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# Appendices

## FY2022 Detailed Project List:

Site	Project Focus	kWh	MMBTU	\$ Savings
Southern State Correctional Facility	LED Lighting, HVAC, Solar DHW	409,602	2,902	\$79,258
133 State St Mont.	Windows	48,712		\$51,770
Bennington Courthouse	LED Lighting	60,122		\$3,802
Rutland Asa-Bloomer Bldg	LED Lighting	135,291		\$19,574
Rutland Courthouse	Envelope, HVAC, Lighting	187,920	400	\$34,501
Bennington Bennco	LED Lighting, Controls	20,482	41	\$3,651
St. Albans Courthouse	LED Lighting, Equipment, Weatherization	22,690	367	\$7,471
New Haven Pub Safe Campus	LED Lighting, Building Equipment, Weatherization	22,250	61	\$4,349
109 State St & Connector Mont.		273,377	718	\$40,879
120 State St Mont.	LED Lighting, HVAC	133,331	1,032	\$26,612
Bennington Welcome Center	LED Lighting, Controls	30,008	4.2136	\$4,557
115 State St & Annex Mont.	LED Lighting, BAS, HVAC, Controls	93,403	12,399	\$12,399
Montpelier 2 Governor Aiken Ave	Windows, LED Lighting	7,761		\$1,507
Montpelier 4 Governor Aiken Ave (6002)	Windows, LED Lighting and Envelope	5,844		\$743
<b>Totals</b>		<b>1,450,793</b>	<b>17,925</b>	<b>\$291,073</b>

## Future Projects Under Development from Completed Energy Audits:

Site	kWh	MMBTU	\$ Savings
Burlington Zampieri Office Bldg (6174)	530,678	256	\$74,227
Fair Haven Welcome Center (9250)	9,977	33	\$1,985
Guilford Southeast Welcome Center (9734)	12,980	30	\$2,346
Pittsford Admin Building (6288)	6,441	1	\$1,290
Pittsford Firehouse (6272)	5,565	271	\$4,906
Pittsford Warehouse (Behind Firehouse) (6284)	396	48	\$859
Rutland McKinley Ave - COMPLEX	14,213	17	\$2,452
Rutland Motor Vehicles (6307)	6,374	36	\$1,380
Barre McFarland State Office Bldg (6071)	90,984	690	\$27,032
St. Johnsbury State Office Building (6340)	12,925	58	\$2,727
Burlington Costello Courthouse(6173)	229,800	2,420	\$54,350
Montpelier 6 Baldwin St (6004)	34,729	191	\$6,780
Montpelier 126 State St (6022)	2,492	217	\$4,082
Montpelier 122 State St Boiler Plant (6021)	52,510		\$6,166
Montpelier 10 Taylor St Shop and Storage (6013)		117	\$1,347

Marble Valley Regional Correctional Facility	TBD	TBD	TBD
<b>Totals</b>	<b>1,010,064</b>	<b>4,385</b>	<b>\$191,929</b>

Future Scheduled Energy Audits:

<b>Property Name</b>	<b>Property GFA - Self-Reported (ft<sup>2</sup>)</b>
Montpelier 1 Baldwin St (6003)	7,952
Montpelier 134 State St (6026)	3,048
Colchester New Health Lab (6204)	61,600
Montpelier 111 State St (6016)	46,672
Bradford Rest Area (9707)	6,861
St. Albans Troop Headquarters - CAMPUS	11,634
Berlin Vermont State Hospital (6091)	46,564
Colchester Bldg 1710 (6201)	12,798
St. Johnsbury CCWC - CAMPUS	28,437
Newport NSCF	135,985
St. Albans NWSCF - CAMPUS	94,185
<b>Totals</b>	<b>455,736</b>

BGS, with support from EVT, developed this prioritized-buildings list using two primary criteria; Energy Cost Intensity (ECI, measured in \$/ft<sup>2</sup>) and Site Energy Use Intensity (EUI, measured in kBtu/ft<sup>2</sup>). ECI shows how much BGS spends in electricity and fuel per building per ft<sup>2</sup>. Site EUI measures how much electricity and fuel a building consumes per ft<sup>2</sup>.

The Program team ranks buildings by each primary criterion independently, from best to worst performing building. The team then averages the two criteria-based lists for each year. The final step in creating the prioritized list above is to average the years together to determine the best and worst performing buildings over the past four years.